United States Department of Agriculture
Soil Conservation Service
7 South Main
Executive Plaza
Suite 104
Tooele, Utah 84074

July 21, 1986

Jim Lake
Lone Star
615 West 8th South
P. O. Box 1469
Salt Lake City, Utah 84110

Dear Jim,

In response to your request, as per our visit to the "Antone Clay Quarry" today, is a summary of my findings and recommendations for reclaiming the disturbed area.

The upper shallower soil has an excellent stand of Bluebunch Wheatgrass and Sandberg Bluegrass. Further down the slope where the soil is deeper, the bluegrasses along with Sagebrush are the main plants. Cheatgrass, Needle and Thread and Threeawn grass are the main plants.

I would recommend you continue to stock pile as much of the top soil as possible, preferably, the top 6-8" to be used later to topdress disturbed areas where practical. The top soil has organic matter that is needed for a good reclaimation project. Wherever possible slopes on cuts and trenches should be reshaped to a 2:1 slope or greater.

Steep slopes should be broadcast seeded with Bluebunch Wheatgrass, 8#/ac, and Crested Wheatgrass (preferably Hycrest) 6#/ac and 1#/ac Sweet Clover PLS (Pure Live Seed). Cover the seed with a drag or by hand raking. The road areas should be drilled with crested Wheatgrass 8#/ac and 1#/ac Sweet Clover PLS on a clean, firm seedbed. Roads should be ripped up and a firm seedbed prepared. Seeding will be done in late fall before snow cover is on the ground.

Attached is a "Range Condition Record" I filled out for your use.

Carlos Garcia

Carlos Garcia, SCS, Tooele, Ut 84074

attachment

UT-ECOL SCI-2
(Rev. 3/83)
File: 190-19

RANGE CONDITION RECORD

USDA
Soil Conservation Service
Write-up No. 1

Site Name upland gravelly loam Ranch Lone Star
Soil Taxonomic Unit Abela loam Profile No.
Elevation 4800-4900 Exposure East Vegetative Aspect
Field Office Tooele Location: T. 2S R. 6W Sec. 7, 8, 17, 18 1/4 1/4
Range Conservationist: Carlos Bown Date: 7-21-86

(1) Plant Group	(2) Symbol or Common Plant Names	(3) % Present by wt.	(4) % Climax by wt.	(5) Proper use factor	(6) Weighted PUF
Grasses and Grass-like Plants	Cheatgrass	5			
	Blue bunch wheatgrass	15			
	Sanberg blue grass	20			
	Indian Rice grass	T			
	Battle brush Squirreltail	T			
	Three awn grass	T			
	Needle and thread	10			
	Three awn	10			
% 60					
Forbs or Weeds	Fillerie	2			
	prickly Lettuce	2			
	Sunflower	T			
	Thistle	1			
	wild onion	T			
	Ut. St.flower Sage hilly	T			
	Estragulus	T			
	indian paintbrush	T			
	phlox				
% 5					
Trees and Shrubs	Big Sagebrush	20			
	little yellowbrush	5			
	Juniper	10			
% 35					
100	TOTAL				

Total Annual Yield _____ lbs/Ac. air-dry
(Understory if woodland)

CONDITION CLASS INDICATORS:

Evaluate each indicator in relation to climax for the site. (Circle those that apply).

% Climax Vegetation	Accelerated Erosion	Population Density	% Plant Diversity	Condition Rating
100-76	None	3/4 to full	100-76	Excellent (Climax)
75-51	Slightly Active	1/2 to 3/4	75-51	Good (Late seral)
50-26	Moderately Active	1/4 to 1/2	50-26	Fair (Mid seral)
25-0	Severely Active	0 to 1/4	25-0	Poor (Early seral)

TREND INDICATORS:

Plant Vigor: good
Seedlings and young plants: some new plants noted
Litter and mulch:
Condition of soil surface:
Apparent Trend: Improving Declining Static

EROSION COMPUTATION DATA

Bare Ground 15 %
Surface Fragments 10 % = 100%
Ground Cover 65 %
(Litter and vegetation within 1 inch of soil surface)

Height of canopy: 0 0 0.5m 2m 4m
Canopy Cover: 0 25% 50% 75%
Slope ____ % Slope Length ____ ft.

R ____ K ____ LS ____ C ____ T ____

Wind Erosion Data: Climate ____ Soil WEG ____
Unsheltered distance ____ Veg. Cover ____

Soil Loss (sheet and rill) ____ tons/acre/yea
Soil Loss (gully erosion) ____ tons/acre/yea
Soil Loss (wind) ____ tons/acre/yea

USE DATA

Use History:
Kind of Animal:
Season of Use:
Burning History:

Present Utilization ____ % of ____ (key species)
Estimated Utilization Efficiency: ____ %

Notes:

Soil Clay
Si. 51%
al 22-27%

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December 18, 1986

R. K. Kronstadt
2812 Kentucky Avenue
Salt Lake City, Utah

Dear Mr. Kronstadt,

In response to your telephone request for supplemental information on the Antone Lake Shale Quarry Rehabilitation Project, as per our discussion:

1. Generally, if adequate top soil is stock-piled to cover the spoil area no fertilizer is needed to insure the success of seeding. Since the recommended seeding will be in the late fall, very little benefit would be derived from the application of nitrogen fertilizer.

2. Ladac or Spreader II Alfalfa @ 2 Lb./ac. Pure LIfe Seed is recommended over Yellow Sweet clover.

3. Highcrest or Ephraim crested wheatgrass @ 7 lb./ac. Pure Life Seed is recommended if available over Common crested wheatgrass.

Please note to double the seeding rate if seeding is broadcast.

Please call me at 882-2276 if you have any questions.

Carlos Garcia
Soil Conservationist

cc: Joe Urbanik
Tooele County Planning Commission

26 Reclamation Schedule

A. No construction in necessary

B. 15 days

C. 5 years

D. Refer to #27 reference #

#27 Estimated Costs for Reclamation Schedule

Item	Description	Days	Est. Cost*	Equipment
A)	Cleanup/removal of structures	1	$ 1,800	Dryer/Loader
B)	Backfill, grading contourint	5	12,000	Dozer/Loader grader
C)	Topsoil redistribution	2	1,600	Loader
D)	Revegetation	3	3,000	Tiller, disc Tractor
E)	Labor	-	--	(included A-D)
F)	Fencing/Safety	3	5,061	Tractor
G)	Reseeding	1	1,000	Tractor, tiller seeder
	Total	15	$24,461	

Note: 1) Cost estimate is based on current hourly rates for dozer ($125), loader ($100), grader ($125). Revegetation equipment ($125). Fencing $2 per ft. x 2500' + signs.

* Reference: Caterpillar handbook, edition 12.

QUARRY ANTONE MINING SEQUENCE

Area	Use	Years	≈ Tons/Yds
1	Mining	1985-86	60 K +
2	Topsoil storage	-	2,200 yds^3
3	Stockpile	-	-
4	Mining	1987-89	150K +
5	Stockpile	-	
6	Topsoil storage	-	4,400 yds^3
7	Mining	1990-92	150K +

Acreage Distrubed

Area 1 + 2 + 3	≈	2.79 acres.
Area 4 + 5 + 6	≈	5.75 acres
Area 7	≈	4.77 acres